Listing of Claims

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Previously Presented) A method of determining buffer management information for a data processing system, comprising:

determining a latency parameter based on a first system configuration of the data processing system, the latency parameter representing a latency time amount between a display data request and delivery of display data to a display buffer;

determining a buffer drain rate based on a first display mode of the data processing system;

calculating one or more buffer management parameters based on at least the latency parameter and the buffer drain rate; and

making the one or more buffer management parameters available for management of the display buffer.

2. (Original) The method of claim 1, further comprising:

determining a buffer fill rate based on a buffer configuration; and

calculating at least one of the one or more buffer management parameters based on the buffer fill rate.

3. (Original) The method of claim 1, further comprising:

calculating at least one of the one or more buffer management parameters based on a buffer size.

4. (Original) The method of claim 1, wherein the one or more buffer management parameters comprise a watermark level.

5. (Original) The method of claim 4, wherein the watermark level comprises a lower bound of a desired watermark level range.

6. (Original) The method of claim 4, wherein the watermark level comprises an upper bound of a desired watermark level range.

7. (Original) The method of claim 1, wherein the one or more buffer management parameters comprise a burst length.

8. (Original) The method of claim 7, wherein the burst length comprises a lower bound of a desired burst length range.

9. (Original) The method of claim 7, wherein the burst length comprises an upper bound of a desired burst length range.

10. (Original) The method of claim 1, further comprising:

detecting a change from the first display mode to a second display mode; and

calculating at least one of the one or more buffer management parameters based on the second display mode.

11. (Original) The method of claim 1, further comprising:

detecting a change from the first system configuration to a second system configuration; and

calculating at least one of the one or more buffer management parameters based on the second system configuration.

12. (Original) The method of claim 1, wherein the latency parameter represents a maximum expected latency time amount for the first system configuration of the data processing system.

13. (Original) The method of claim 1, wherein the first display mode is characterized by at least one of a first refresh rate, a first display resolution, and a first color depth.

14. (Original) The method of claim 1, wherein the first system configuration is characterized at least by a buffer memory type.

15. (Original) An apparatus comprising:

a display part which directs movement of display data, the display part including a buffer to store display data to be displayed on a display screen; and

a data computing system configured to calculate one or more buffer management parameters based on a latency parameter based on a first system configuration and a buffer drain rate based on a first display mode;

wherein the latency parameter represents a latency time amount between a display data request and delivery of display data tc the buffer; and

wherein the buffer drain rate represents a rate at which the display data is read from the buffer.

16. (Original) The apparatus of claim 15, wherein the data ccmputing system is further configured to calculate at least cne of the one or more buffer management parameters based on a buffer fill rate, the buffer fill rate based on a configuration of the buffer.

17. (Original) The apparatus of claim 15, wherein the data ccmputing system is further configured to calculate at least one of the one or more buffer management parameters based on a buffer size.

18. (Original) The apparatus of claim 15, wherein the one or more buffer management parameters comprise a watermark level.

19. (Original) The apparatus of claim 18, wherein the watermark level comprises a lower bound of a desired watermark level range.

20. (Original) The apparatus of claim 18, wherein the watermark level comprises an upper bound of a desired watermark level range.

21. (Original) The apparatus of claim 15, wherein the one or more buffer management parameters comprise a burst length.

22. (Original) The apparatus of claim 21, wherein the burst length comprises a lower bound of a desired burst length range.

23. (Original) The apparatus of claim 21, wherein the burst length comprises an upper bound of a desired burst length range.

24. (Original) The apparatus of claim 15, wherein the data computing system is further configured to detect a change from a first display mode to a second display mode, and in response to the detecting is further configured to calculate at least one of the one or more buffer management parameters based on the second display mode.

25. (Original) The apparatus of claim 15, wherein the data computing system is further configured to detect a change from a first system configuration to a second system configuration, and in response to the detecting is further configured to calculate at least one of the one or more buffer management parameters based on the second system configuration.

26. (Original) The apparatus of claim 15, wherein the latency parameter represents a maximum expected latency time amount for the first system configuration.

27. (Original) The apparatus of claim 15, wherein the first display mode is characterized by at least one of a first refresh rate, a first display resolution, and a first color depth.

28. (Original) The apparatus of claim 15, wherein the first system configuration is characterized at least by a first buffer memory type.

29. (Previously Presented) An article comprising a storage medium which stores computer-executable instructions, the instructions being readable and operable to cause a computer to perform operations comprising:

determining a latency parameter based on a first system configuration of the data processing system, the latency parameter representing a latency time amount between a display data request and delivery of display data to a display buffer;

determining a buffer drain rate based on a first display mode;

calculating one or more buffer management parameters based on at least the latency parameter and the buffer drain rate; and

making the one or more buffer management parameters available for management of the display buffer.

30. (Original) The article of claim 29, the operations further comprising:

determining a buffer fill rate based on a buffer configuration; and

calculating at least one of the one or more buffer management parameters based on the buffer fill rate.

31. (Original) The article of claim 29, the operations further comprising:

calculating at least one of the one or more buffer management parameters based on a buffer size.

32. (Original) The article of claim 29, wherein the one or more buffer management parameters comprise a watermark level.

33. (Original) The article of claim 32, wherein the watermark level comprises a lower bound of a desired watermark level range.

34. (Original) The article of claim 32, wherein the watermark level comprises an upper bound of a desired watermark level range.

35. (Original) The article of claim 29, wherein the one or more buffer management parameters comprise a burst length.

36. (Original) The article of claim 35, wherein the burst length comprises a lower bound of a desired burst length range.

37. (Original) The article of claim 35, wherein the burst length comprises an upper bound of a desired burst length range.

38. (Original) The article of claim 29, the operations further comprising:

detecting a change from the first display mode to a second display mode; and

calculating at least one of the one or more buffer management parameters based on the second display mode.

39. (Original) The article of claim 29, the operations further comprising:

detecting a change from the first system configuration to a second system configuration; and

calculating at least one of the one or more buffer management parameters based on the second system configuration.

40. (Original) The article of claim 29, wherein the latency parameter represents a maximum expected latency time amount for the first system configuration of the data processing system.

41. (Original) The article of claim 29, wherein the first display mode is characterized by at least one of a first refresh rate, a first display resolution, and a first color depth.

42. (Original) The article of claim 29, wherein the first system configuration is characterized at least by a buffer memory type.

43. (Previously Presented) A system comprising:

a display;

a display part which directs movement of display data to the display, the display part including a buffer to store display data to be displayed on the display; and

a data processor configured to calculate one or more buffer management parameters based on a latency parameter based on a first system configuration and a buffer drain rate based on a first display mode;

wherein the latency parameter represents a latency time amount between a display data request and delivery of display data to the buffer; and

wherein the buffer drain rate represents a rate at which the display data is read from the buffer.

44. (Original) The system of claim 43, wherein the data processor is further configured to calculate at least one of the one or more buffer management parameters based on a buffer fill rate, the buffer fill rate based on a configuration of the buffer.

45. (Original) The system of claim 43, wherein the data processor is further configured to calculate at least one of the one or more buffer management parameters based on a buffer size.

46. (Original) The system of claim 43, wherein the one or more buffer management parameters comprise a watermark level.

47. (Original) The system of claim 46, wherein the watermark level comprises a lower bound of a desired watermark level range.

48. (Original) The system of claim 46, wherein the watermark level comprises an upper bound of a desired watermark level range.

49. (Original) The system of claim 43, wherein the one or more buffer management parameters comprise a burst length.

50. (Original) The system of claim 49, wherein the burst length comprises a lower bound of a desired burst length range.

51. (Original) The apparatus of claim 49, wherein the burst length comprises an upper bound of a desired burst length range.

52. (Original) The system of claim 43, wherein the data processor is further configured to detect a change from a first display mode to a second display mode, and in response to the detecting is further configured to calculate at least one of the one or more buffer management parameters based on the second display mode.

53. (Original) The system of claim 43, wherein the data processor is further configured to detect a change from a first system configuration to a second system configuration, and in response to the detecting is further configured to calculate at least one of the one or more buffer management parameters based on the second system configuration.

54. (Original) The system of claim 43, wherein the latency parameter represents a maximum expected latency time amount for the first system configuration.

55. (Original) The system of claim 43, wherein the first display mode is characterized by at least one of a first refresh rate, a first display resolution, and a first color depth.

56. (Original) The apparatus of claim 43, wherein the first system configuration is characterized at least by a first buffer memory type.

57. (Previously Presented) A method of determining buffer management information for a data processing system, comprising:

determining a maximum amount of time that access to a local memory to obtain data to supply a display FIFO buffer memory may be delayed;

determining a drain rate at which data is to be drained from the display FIFO buffer memory based on a display mode supported by a graphics processor;

calculating a watermark value based on at least the maximum amount of time and the drain rate; and

making the watermark value available for management of the display FIFO buffer memory.

58. (Previously Presented) The method of claim 57, wherein calculating the watermark value comprises multiplying the maximum amount of time and the drain rate.

59. (Previously Presented) The method of claim 58, wherein the watermark value further comprises subtracting the product of the maximum amount of time and the drain rate from the size of the display FIFO buffer memory.

60. (Previously Presented) A method of determining buffer management information for a data processing system, comprising:

determining a maximum amount of time that access to a local memory to obtain data to supply a display FIFO buffer memory may be delayed;

determining a drain rate at which data is to be drained from the display FIFO buffer memory based on a display mode supported by a graphics processor;

calculating a burst length value based on at least the maximum amount of time and the drain rate; and

making the burst length value available for management of the display FIFO buffer memory.

61. (Previously Presented) The method of claim 60, wherein:

λ_{min} comprises the product of the maximum amount of time and the drain rate;

Φ comprises the size of the display FIFO buffer memory;

δ comprises the drain rate; and

calculating the burst length value comprises performing the following operation:

$$\lambda_{min} \times \left(\frac{\varphi}{\varphi - \delta} \right) .$$

62. (Previously Presented) The method of claim 60, wherein calculating the burst length value comprises subtracting the result of the performed operation from the size of the display FIFO buffer memory.